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IN THE

Supreme Court of the United States

OCTOBER TERM, 1965

No. 1092

UNIVERSAL MARION CORPORATION,

Petitioner,

vs.

THE WARNER & SWASEY COMPANY, et al.,

Respondents.

APPENDIX
TO
PETITION FOR WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE TENTH CIRCUIT

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APPEDIX A

Constitutional and Statutory Provisions

1. Article I, Section 8, Clause 8, of the Constitution provides:

> "The Congress shall have Power . . .
>
> . . . .
>
> To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries. . . ."

2. Sections 102(b) and 282 of the Patent Code of 1952 provide (35 U. S. C. §§ 102(b) and 282):

> "§ 102. CONDITIONS FOR PATENTABILITY NOVELTY AND LOSS OF RIGHT TO PATENT
>
> A person shall be entitled to a patent unless—
>
> . . . .
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, . . ."

> "§ 282. PRESUMPTION OF VALIDITY; DEFENSES
>
> A patent shall be presumed valid. The burden of establishing invalidity of a patent shall rest on a party asserting it. . . ."

APPENDIX B

Opinion of the Court of Appeals

UNITED STATES COURT OF APPEALS

FOR THE TENTH CIRCUIT

No. 7979

UNIVERSAL MARION CORPORATION,

Appellant,

vs.

THE WARNER & SWASEY COMPANY, et al.,

Appellees.

APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLORADO

(December 30, 1965)

Before PICKETT, LEWIS, and HILL, Circuit Judges.

PICKETT, Circuit Judge.

This is a patent infringement suit brought by Warner & Swasey Company, exclusive licensee of Patent No. 2,541,045, along with the owners of the patent, against Universal Marion Corporation, which manufactures and sells the accused machine. The defense was invalidity and non-infringement. It was alleged that the accused machine infringed Claims 2, 6, 7, 8, 9 and 16 of the patent. After an exhaustive discussion of the facts and the law relating thereto,[1] the trial court found the patent to be valid and all

[1] Warner & Swasey Co. v. Universal Marion Corp., 237 F. Supp. 719.

the aforesaid claims, except Claim 2, to be infringed by the "Grademaster" machine manufactured by the appellant, and entered judgment enjoining further infringement. On appeal, Universal Marion Corporation presents only the question of the validity of the patent. It contends that the patent is invalid for two reasons, (1) that the claims in suit did not define a patentable invention over the prior art, and (2) that the claims in suit are invalid because there had been a prior public use of the invention by the patentee more than one year prior to the filing of the application for a patent.

The machine disclosed by the patent is a multi-purpose material-moving device used principally in the construction and maintenance of roads, although its use is not limited to that purpose. It is designed for digging, loading and grading all kinds of surloading, scraping and grading all kinds of surfaces, including the sloping of banks of any grade and the movement of material at various angles. Many of the purposes for which the machine is used may be accomplished by single-purpose machines, such as shovels, bull-dozers, back hoes and draglines.[2]

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[2] The patent states the general purpose of the invention to be:

"This invention, as indicated, relates to a material moving apparatus. More particularly, it relates to a means of more expeditiously carrying out various operations wherein material is elevated and moved to a predetermined position or carried to a distant place of disposal. It is of particular utility for earth-working operations or for handling bulk material, such as sand, gravel, coal, snow, ashes, chemicals, minerals and other similar materials. The apparatus is in the nature of a universal earth-working machine adapted in a single unit to perform functions usually carried out by specialized types of apparatus, such as graders, bull-dozers, slopers, motor patrols, ditchers and the like. This is a continuation in part of our Patent 2,348,796, May 16, 1944."

Ray Ferwerda and his brother Koop were construction contractors, engaged in the earth-moving business, which included the finishing and repair of road grades. From their experience they perceived the need for a single multi-purpose apparatus which would do the work that was then performed by a variety of single-purpose machines and by hand labor. They were the first to devise a material-moving machine with a digging or scraping implement pivoted on the outer end of a rotatable, telescoping boom which could be extended or retracted by a hydraulic mechanism separate from the boom, but operatively connected with it and capable of handling heavy loads. The working tool so attached to the extensible section of the boom permitted a wrist-like movement and could be held in any desired position by the utilization of hydraulically controlled elements operating in pairs and adapted so as to be moved relatively to each other under various operative conditions.[3] A necessary rotating platform can be mounted on the average truck frame. It carries the entire boom assembly consisting of the metal boom cradle, engine and pumps, and an operator's cab, together with the hydraulic cylinders which control the movements of the boom. A turntable arrangement provides support for the rotating platform for the sluing, or swinging, of the boom on a horizontal plane. The trial court described the operation of the boom and the implement on the extended end, as follows:

"The machine employs a telescoping boom for supporting and operating an implement, such as a bucket.

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[3] The movement was described as being similar to that of the forearm, wrist and hand of a human arm. Combined with the boom mechanism, the wrist-like action was such that the load carrying implement could be independently (1) raised and lowered, (2) swung in a horizontal plane, (3) moved directly to and from the machine, (4) rotated about the line of extension and retraction, and (5) moved on an axis crosswise of the boom.

The telescoping feature enables the tool to be extended and retracted towards and away from the material to be worked upon. The boom may be oscillated about its axis so as to tilt the tool for working at various angles. The boom as a whole may be raised or lowered, and it may also be rotated by rotating the platform on which it is mounted. Means are also provided to give the tool what is called 'wrist action', a movement roughly akin to raising and lowering one's hand while bending at the wrist. All of these movements are accomplished by hydraulic means. The machine is thus capable of five distinct movements, which enable it to accomplish the various purposes for which it was constructed." *Warner & Swasey Co.* v. *Universal Marion Corp.*, 237 F. Supp. 719, 722.

The Ferwerdas completed their first machine in 1942, while on a road job near Cleveland, Ohio. This machine employed a rotatable telescopic boom concept as defined in the patent, but lacked many of the later features. Following an hour-long experimental application in the fall of 1942, the machine was returned to the shop for modification, after which it was again used for about an hour and a half and was still found to be unsatisfactory. During the winter of 1942-1943, additional changes were made, particularly in the type and support for the boom. The machine with the new boom arrangement was used on a construction project at Ravenna, Ohio, in March of 1943. The use of the machine on the Ravenna job extended up to mid-June of 1943; its actual use was for about six weeks. During this period it was discovered that many additional improvements would be necessary. In the fall of 1943, the machine was taken to a project in Pennsylvania where it was used "for a couple of weeks." No further use was made of this particular machine. During the next six

months it was completely re-engineered and re-designed. Production drawings were made of this last model, and the patent was applied for on May 15, 1944. Five machines of the design shown in the patent were made under the trade name of "Gradall" and offered for sale. Warner & Swasey acquired the exclusive rights to the patent early in 1946. Since it was first offered for sale on the market, the machine has been a commercial success.

In support of its contention that the claims of the patent in suit were invalid because they did not define an invention over the prior art, Universal Marion Corporation cites three former patents—United States Patents, Byrne No. 1,526,830, issued February 17, 1925; Wheeler Patent No. 1,987,982, issued January 15, 1935; and British Patent, Nixon, No. 2,958, accepted January 1, 1898. None of these patents disclose a material-moving machine which embodies a rotatable telescopic boom with the load-bearing implement on the outer end of the extensible section similar to that displayed in the patent. The machines defined in the Byrne, Wheeler and Nixon patents have an extension system with a tool or implement on the end of a piston rod which operates in and out of a hydraulic cylinder by which an extension or retraction of the piston rod may be accomplished. While movement of a piston rod in and out of a cylinder through a packing gland has some of the features of telescopic action and is subject to longitudinal rotation, these features do not correspond to the telescopic boom of the Ferwerda machine and do not teach its principle. The trial court found that an apparatus with a working tool on the end of a piston rod would not withstand the strain of heavy loads, while in the Ferwerda machine the weight and strain of the load was transmitted to the boom. The court stated that it was "satisfied from the testimony that the connection of a load bearing implement to the end of a piston rod, as

demonstrated by most of the prior art, will not accomplish the purposes of the Ferwerda invention." Warner & Swasey Co. v. Universal Marion Corp., supra, 237 F. Supp. at 729. There was testimony by an expert witness that the piston rod arrangement cannot function as a boom. Universal Marion's expert witness stated that he did not know of an earth-moving machine which used an implement attached to the end of a piston rod. As the term "boom" is used in the Ferwerda patent, it does not include a piston rod type of extensible section as described in the Byrne, Wheeler and Nixon patents, or any of the prior art referred to. There was ample evidence to sustain the trial court's finding that a piston rod will not function as a boom, as that term is used, in the patents before the court.

Regularly issued patents are presumed to be valid, and a party asserting invalidity on the ground of anticipation in the prior art, or for any other reason, has the burden of establishing such invalidity by clear and convincing evidence. 35 U. S. C. § 282; King-Seeley Thermos Co. v. Refrigerated Dispensers, Inc., 10 Cir., 354 F. 2d 533, and cases cited. We agree with the trial court that the piston rod concept of a material-moving machine does not teach the principle of the telescopic boom contemplated by the Ferwerda patent, and that the burden of proving invalidity has not been sustained.[4] Furthermore, as found by the

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[4] In discussing the tests for determining whether a patent is anticipated by the prior art, this court said in McCullough Tool Co. v. Well Surveys, Inc., 343 F. 2d 381, 398:

"In this connection, this court has held that the burden is upon the one asserting anticipation to sustain it by clear and convincing evidence and a patent is to be measured as anticipatory, not by what might be made out of it, but by what it clearly and definitely discloses. Mott Corporation v. Sunflower Industries, Inc., supra. [10 Cir., 314 F. 2d 872.] In order for

(Footnote continued on following page)

trial court, the combination of elements in the Ferwerda machine has the requisite novelty of a true combination which constitutes an invention. Warner & Swasey Co. v. Universal Marion Corp., supra, 237 F. Supp. at 734-735. It solved a difficult problem and brought about a new result which workers in the art of material-moving machinery had been unable to accomplish. It added to the art something that was new and useful, which the trial court found was not obvious to one of ordinary skill in the art. 35 U. S. C. § 103; King-Seeley Thermos Co. v. Refrigerated Dispensers, Inc., supra.

35 U. S. C. § 102 provides that a person shall be entitled to a patent unless:

> "(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one

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(Footnote continued from preceding page)

a prior patent to anticipate an invention, it is necessary that all of the elements of the invention or their equivalents be found in one single structure or description, where they do substantially the same work in substantially the same way. Preformed Line Products Co. v. Fanner Mfg. Co., 6 Cir., 328 F. 2d 265, cert. denied 379 U. S. 846, 85 S. Ct. 56, 13 L. Ed. 2d 51. In order for a prior printed publication to anticipate an invention the description contained therein must disclose the complete and operative invention in such full, clear and exact terms as to enable any person skilled in the art to which it pertains to practice the invention to the same extent as he would be enabled to do if the information were derived from a prior patent. Eames v. Andrews, 122 U. S. 40, 7 S. Ct. 1073, 30 L. Ed. 1064; 40 Am. Jur., Patents, § 37, p. 554. In short, a printed publication is to be tested by the same rules as those applicable to a prior patent. 69 C. J. S. Patents § 41, p. 232. Anticipation is strictly a technical defense and unless all of the same elements are found in exactly the same situation and united in the same way to perform an identical function, there is no anticipation. National Lead Company v. Western Lead Products Company 9 Cir., 324 F. 2d 539; Stauffer v. Slenderella Systems of California, 9 Cir., 254 F. 2d 127."

year prior to the date of the application for a patent in the United States * * *."

It is contended that the use of the early Ferwerda machines constitutes a public use within the meaning of the statute. It is well settled that all uses do not necessarily constitute a public use. "Use by an inventor in good faith for the purpose of testing his apparatus or device for experimental purposes is not public use within the scope of the statute, even though incidental to such use he derives some financial return." Merrill v. Builders Ornamental Iron Co., 10 Cir., 197 F. 2d 16, 19. See also, McCullough Tool Co. v. Well Surveys, Inc., supra, 343 F. 2d at 393-394. The trial court found that the use of the machine more than one year prior to the application for patent was a good-faith use for experimental purposes and not a public use. 237 F. Supp. 724-725. The finding is sustained by the evidence and is not clearly erroneous.

Affirmed.

APPENDIX C

Judgment of Court of Appeals

UNITED STATES COURT OF APPEALS

FOR THE TENTH CIRCUIT

NOVEMBER TERM, 1965

No. 7979

UNIVERSAL MARION CORPORATION,

Appellant,

vs.

THE WARNER & SWASEY COMPANY, et al.,

Appellees.

APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLORADO

This cause came on to be heard on the transcript of the record from the United States District Court for the District of Colorado and was argued by counsel.

On consideration whereof, it is ordered and adjudged by this court that the judgment of the said district court in this cause be and the same is hereby affirmed.

December 30, 1965

APPENDIX D

Opinion of the District Court

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLORADO

FILED SEPTEMBER 18, 1964

No. 7805

THE WARNER & SWASEY COMPANY, et al.,
Plaintiffs,

vs.

UNIVERSAL MARION CORPORATION,
Defendant.

MEMORANDUM, OPINION AND ORDER

This is an action brought by the patentees[1] and the exclusive licensee of Patent No. 2,541,045 for infringement thereof. Plaintiff Warner Swasey is an Ohio Corporation, with its principal place of business in Cleveland, Ohio, engaged in the business, among other things, of manufacturing and selling certain earth moving equipment. As exclusive licensee under the patent in suit, it is the manufacturer of "Gradall" machines. Defendant Universal Marion Corporation is a Florida Corporation which has

[1] This group of individuals has been referred to as the "Ferwerda Group" through the litigation. It is composed of Ray Ferwerda, one of the patentees, and Sophia Louise Ferwerda, Alice Rose Olsen, Sophia Louise Rebell, Raymond Koop Ferwerda, and Frederick Martin Ferwerda, heirs of Koop Ferwerda, the other patentee of the patent in suit.

its executive offices at Jacksonville, Florida, and factories at St. Louis, Missouri and Marion, Ohio,[2] and makes and sells various types of earth moving equipment. Among its products is the "Grademaster" machine which is accused of infringement in this action.

At issue are claims 2, 6, 7, 8, 9 and 16 of the patent. Plaintiffs have alleged that these claims[3] are being infringed by defendant's Grademaster machine; defendant has alleged that the claims are invalid for a number of reasons, and further, that if the claims are valid, they are not infringed by the Grademaster. These six claims are, therefore, at issue both as to validity and infringement.

The patent in suit involves a material moving apparatus, which, as described in the patent, "* * * is in the nature of a universal earth-working machine adapted in a single unit to perform functions usually carried out by specialized types of apparatus, such as graders, bulldozers, slopers, motor patrols, ditchers and the like." It is said to be "* * * of particular utility for earth-working operations or for handling bulk materials, such as sand, gravel, coal, snow, ashes, chemicals, minerals and other similar materials."

The machine employs a telescoping boom for supporting and operating an implement, such as a bucket. The telescoping feature enables the tool to be extended and retracted towards and away from the material to be worked upon. The boom may be oscillated about its axis so as to

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[2] At the time this suit was brought, defendant had a place of business known as the Quick-Way Crane Shovel Company Division at Denver, Colorado, where it manufactured the Grademaster machine. This Division was acquired by defendant on June 9, 1961. At the present time, Grademasters are being manufactured in St. Louis, Missouri.

[3] Plaintiffs did not allege infringement of claim in their complaint. It was, however, brought into issue in the remaining pleadings both as to validity and infringement.

tilt the tool for working at various angles. The boom as a whole may be raised or lowered, and it may also be rotated by rotating the platform on which it is mounted. Means are also provided to give the tool what is called "wrist action", a movement roughly akin to raising and lowering one's hand while bending at the wrist. All of these movements are accomplished by hydraulic means. The machine is thus capable of five distinct movements, which enable it to accomplish the various purposes for which it was constructed.

The law by which this case is to be decided is well settled. There is no real dispute between the parties about it. As is usual with a patent case, the controversy arises out of the facts and the conclusions to be drawn therefrom. Following what has been said to be "the better practice," Sears, Roebuck & Co. v. Jones, 308 F. 2d 705, 706 (10th Cir. 1962), we first consider the issue of the validity of the patent.

I. VALIDITY OF THE PATENT

Defendant asserts that all of the claims at issue are invalid under 35 U. S. C. § 102(a), (b), (e) and (g) and for failure to meet the requirements of 35 U. S. C. § 103 and § 112.[4] Briefly put, defendant's assertions go to public use

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[4] The subsections of 35 U. S. C. § 102 relied on by defendant provide as follows:

"A person shall be entitled to a patent unless—

"(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the application for a patent, or

"(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or * * *

"(e) the invention was described in a patent granted on an application for patent by another filed in the United States

(Footnote continued on following page)

of the invention for more than a year prior to application for patent, the machine represents only an aggregation of old elements disclosed in prior art, and the invention is not described with sufficient specificity and particularity.

(Footnote continued from preceding page)

before the invention thereof by the application for patent, or * * *

"(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other."

35 U. S. C. § 103, entitled "Conditions for patentability; non-obvious subject matter," provides:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

35 U. S. C. § 112, entitled "Specification," provides:

"The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

"The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

"An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof."

A. PUBLIC USE

The issue relating to public use is simply stated:

Was the invention in "public use • • • more than one year prior to the date of the application for patent in the United States"? 35 U. S. C. § 102(b). If it was, as the defendant contends, the Ferwerdas were not entitled to the patent.

The bulk of the evidence pertinent to this question is found in the response of plaintiff Ray Ferwerda to defendant's requests for admissions, his answers to interrogatories, and his live testimony at trial. The live testimony was either cumulative or complementary to the admissions and answers to interrogatories, and the Court finds no conflict in the testimony presented. The issue between the parties is the conclusion to be drawn from these facts.

Much of the testimony on this point concerned the technical details of the early Ferwerda machines that were built and tested prior to the time application was made for patent. Though it has been carefully reviewed by the Court, there is no reason to recite it here. In our view, the issue may be resolved on the basis of the testimony as it relates to the dates and duration of the early use, the degree of success and difficulties accompanying this use, and the necessity of testing a machine of the nature involved here.

In the fall of 1942, the Ferwerdas, who were at that time the sole owners of the Maple Heights Construction Company, built a machine, which appears to have been a prototype of the device[5] patented. Later that year, this ma-

[5] There is some mention in the live testimony of Mr. Ferwerda of a machine developed about 1940 which was the subject of a patent obtained by the Ferwerda brothers prior to that now in suit. Since defendant does not appear to argue that the testing of this machine constituted public use on the second patent, that evidence will not be considered here.

chine, which the Ferwerdas called a sloper, was tested for approximately one hour under the control of the Ferwerdas on a grading project on Ohio Route 306 on which the Maple Heights Construction Company had a subcontract. The machine proved unsatisfactory, and the Ferwerdas took it back to the shop for additional work. After removing a ten foot telescopic boom section, they again tested it on the same grading project for about one hour or one hour and a half. The machine's performance was still considered unsatisfactory, so the Ferwerdas again withdrew it from the project and did some more work on it.

At this time, they cut off the channel booms and put on a three point suspension, or triangular, boom. This machine was tried out on a Maple Heights Construction Company project at the Ravenna Arsenal in Ravenna, Ohio in the spring of 1943. The exact time that the machine was first used on this project is not clear from the evidence. However, it probably was in mid-March when the frost let up, since it was not powerful enough to work unless substantially all of the frost was out of the ground. In all, the machine was used over about a six-week period in Ravenna, during which time more innovations were made. For example, a brace was added to make the structure more solid and the lifting cylinder was repositioned to reduce its height.

The machine's performance on the Ravenna project was considered partially satisfactory by the brothers, though it was not operative about 25 percent of the time. The Ferwerdas, however, did not consider the design ready for final adoption. Consequently, they re-engineered it, a task which took about six months on paper. Production drawings were made of this model, which they considered to be completely redesigned and not similar to the former machines, and it was the design for which a patent was applied on May 15, 1944.

It is clear from the evidence that a machine constructed by the Ferwerdas was put in use more than a year prior to the time application was made for a patent. The question to be resolved is whether this use was a "public use" within the meaning of 35 U. S. C. § 102(b). In our view, it is resolved by the authorities which deal with testing and experimental use.

It is well settled that not all use is public use, especially when the use is experimental in nature. The law is well set out by Judge Bratton in Merrill v. Builders Ornamental Iron Co., 197 F. 2d 16, at pp. 18-19 (10th Cir. 1952).

> "But an inventor's use of his device or apparatus for experimental purposes is not public use within the intent and meaning of the statute. A use necessarily open to public view is not a public use in the sense of the statute, if it is made in good faith solely for the purpose of testing the qualities or operation of the invention. * * * The determinative factor is whether the use is made in good faith for purposes of experiment in testing the qualities and operation of the device or apparatus. [citing cases] * * * And use by an inventor in good faith for the purpose of testing his apparatus or device for experimental purposes is not public use within the scope of the statute even though incidental to such use he derives some financial return. Good faith use of an invention for such purpose is not changed in character merely by the receipt of incidental profit or gain."

The purpose of the rule appears to be to insure that the invention will be put into the public domain as soon as possible and to prevent the inventor from extending the number of assured profit years beyond that provided by the statute. See Ushakoff v. United States, 327 F. 2d 669,

672 (Ct. Cl. 1964). After full consideration of the evidence, the Court is of the opinion that the use here falls within the rule of the Merrill case and does not contravene the purpose of the statute.

The use of the machine in late 1942 was minimal. It was used on one occasion for about an hour, and, after important modifications had been made, on another occasion for about an hour and one-half. Use during this period was patently experimental, and, given the short duration of use, it clearly was not used for profit. Indeed, under the circumstances—the short time of use, the difficulties encountered, the size of the job and the time of the Ferwerda brothers—it would not be unreasonable to infer that its use during this period was actually unprofitable.

The use on the Ravenna project assumes the same character, even though it was used there for a comparatively much longer time. In view of the fact that there were on that project, between the Ferwerdas and associated contractors, about ten bulldozers, six scrapers and tractors, shovels and cranes and about twenty-five or thirty other pieces of equipment, it is most unlikely that the machine was intended to do the bulk of the work. Nor is there any evidence that the use of the machine was a factor bargained for in letting the contract to the Ferwerdas. Modifications were continually made during this period of use, and the experience obtained from the use led the inventors to make additional modifications thereafter. Moreover, as defendant's witnesses admitted, a much longer period than the six weeks spent on the Ravenna project " * * * could hardly be regarded as excessive for testing the function and utility of a rather complicated machine, newly conceived and newly constructed and for experimentation looking toward essential changes and adjustments." Long Mfg. Co. v. Holliday, 246 F. 2d 95, 102 (4th Cir. 1957). We find no difficulty in holding that the use of the machine prior to

May 15, 1943 "* * * may be properly characterized as substantially for the purposes of experiment." Smith & Griggs Mfg. Co. v. Sprague, 123 U. S. 249, 256, 8 S. Ct. 122, 126, 31 L. Ed. 141 (1887), "* * * made in good faith * * * in testing the qualities and operation of the device or apparatus." Merrill v. Builders Ornamental Iron Co., supra, 197 F. 2d at 19.

B. PRIOR ART

Before discussing the patent in suit, it might be useful to review the law pertinent to a determination of its validity. The principles to be applied are well settled, and with minor exceptions, which will be discussed at appropriate points, are not disputed by the parties. A recent case from this Circuit, Mott Corp. v. Sunflower Industries, Inc., 314 F. 2d 872 (10th Cir. 1963) contains an excellent summary of most of the principles applicable to this case, and we have chosen to rely on it for a statement of such principles. Other supporting authorities are abundant in Mott, and will not be repeated here.

A duly issued patent is presumed to be valid in all respects, and the burden of establishing its invalidity rests upon the party asserting such to show the same by clear and convincing evidence. The presumption is rebuttable, and the question of validity is therefore ultimately a question of law for the Court to decide. The elements requisite to validity are utility, novelty and invention.

As was true in Mott, we are not concerned here with the element of utility or usefulness, since the defendant has not raised the question. Moreover, we find the device described in the claims obviously useful within the meaning of the statute. The crucial issues relate to novelty, "or lack of anticipation by the prior art," and invention, "or

obviousness to one of ordinary skill in the related art." Mott Corp. v. Sunflower Industries, Inc., supra at pp. 877-878. Since some questions, such as whether prior art is analogous, are pertinent to both issues, the facts relating to both issues will be discussed together. The legal conclusions may be neatly categorized, but they rest essentially on the same broad factual basis, each issue to be resolved by reference to a different standard.

Novelty must be determined from the face of the patent, which is itself prima facie evidence of novelty. Whether prior art is analogous to the patent in suit is crucial to both issues. It is the broad factual basis for the resolution of the two different legal issues. We proceed first, therefore, to consider whether the prior art cited by defendant is analogous to the patent in suit. The test of analogy, as set out in Mott Corp. v. Sunflower Industries, Inc., supra at p. 878 is:

> "Whether arts or uses are analogous or non-analogous depends upon the similarity of their elements and purposes. If the elements and purposes in one art or use are related and similar to those in another art or use, and because and by reason of that relation and similarity, make an appeal to the mind of a person having mechanical skill and knowledge of the purposes of the other art, then such arts or uses are analogous. If the converse is true, then they are non-analogous. [citing cases]"

Claims 2, 6, 7, 8, 9 and 16[6] of the patent in suit are vigorously contested on the grounds of anticipation by

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[6] These claims, set out in full, are as follows:

"2. An apparatus of the character described having in combination a support, a rotatable platform on said support, a pair of standards on said platform, a vertically adjustable frame pivotally mounted on said standards, an axially rotatable main boom

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no less than seven prior patents. Of these, one, the Stauft patent, was expressly cited in the patent in suit and therefore strengthens the presumption of validity that attached to the patent merely by due issuance. Mott Corp. v. Sunflower Industries, Inc., 314 F. 2d 872, 877 (10th Cir. 1963); Admiral Corp. v. Zenith Radio Corp., 296 F. 2d 708 (10th Cir. 1961). A second patent, Wheeler, relied on by defendant as prior art, is the subject of dispute between the parties as to the standard by which it is to be judged. Plaintiff asserts that since it was cited in a prior Ferwerda patent that was co-pending at the time application was made for the patent now in suit, that it enjoys the same status as Stauft. Defendant, on the other hand, asserts that Wheeler was not considered by the patent examiner with respect to the patent now in suit and that

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section supported on said frame, means acting between said frame and said boom section for axially rotating the same, at least one extension boom section slidably mounted within said main boom section, a material moving implement carried at the free end of an extension boom section, and means acting between said main boom section and an extension boom section for projecting and retracting the same, and associated means for changing the angle of said implement with reference to its supporting boom extension section.

6. Apparatus comprising a base, a boom mounted on said base for sluing, mechanism for sluing said boom, said boom having a base section and an extensible section telescopically mounted on said base section, mechanism to extend and retract said extensible section, an implement attached to the free end of said extensible section and having a working edge, said base section having a transverse pivotal mounting, a mechanism for tilting said base section about said pivotal mounting, one of said boom sections having a fixed orientation relative to said implement working edge, said one boom section being mounted for oscillation about an axis extending longitudinally of said boom and mechanism for oscillating said one boom section.

7. Apparatus comprising a base, a boom mounted on said base for sluing, mechanism for sluing said boom, said boom having a

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the claims in suit have no presumption of validity whatsoever as against it.

Plaintiffs rely on Otto v. Koppers Co., Inc., 246 F. 2d 789 (4th Cir. 1957). There, the Court held (see p. 801) that even though a prior art reference contained in a co-pending application is not cited in the patent issued on the second application, the issued patent enjoys the same stronger presumption of validity that would attach if the prior art had been cited in the patent itself. Defendants distinguish the case, we think successfully, on the grounds that the co-pendency of the two applications here was only one day, the same examiners were not involved in the two applications, and each of the Ferwerda's applications resulted in a separate patent. These facts are in sharp contrast to Otto where the same examiner was involved in the

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base section and an extensible section telescopically mounted on said base section, mechanism to extend and retract said extensible section, an implement attached to the free end of said extensible section and having a working edge, said implement having a fixed orientation relative to the longitudinal axis of said extension section, said base section having a transverse pivotal mounting, mechanism for tilting said base section about said pivotal mounting, means mounting said base section for oscillation about an axis extending longitudinally on said boom, said extensible section being mounted non-oscillatably about said axis relative to said base section, and mechanism for oscillating said base section about said axis.

8. Apparatus comprising a base, a boom mounted on said base for sluing, mechanism for sluing said boom, said boom having a base section and an extensible section telescopically mounted on said base section, mechanism to extend and retract said extensible section, an implement attached to the free end of said extensible section and having a working edge, said implement having a mounting on said extensible section including a linear pivot extending crosswise of said boom, means for holding said implement in various positions about said pivot, said base section having a transverse pivotal mounting, mechanism for tilting said base section about said pivotal mounting, means mounting said base section for oscillation about an axis extending longitudinally

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proceedings for both applications and the resultant single patent was a "consolidation of several prior copending applications." It is not necessary to consider the scope of the Otto case here; we decide only that it is not applicable to the facts of this case.

Although we hold that Wheeler does not enjoy the status of prior art cited in a patent, we do not go so far as to agree with defendant that the presumption of validity of the patent does not stand as against prior art not cited therein. In our view, the presumption of validity may stand, to a degree, even as against uncited prior art. As stated in Mott Corp. v. Sunflower Industries, Inc., supra, 314 F. 2d at 877, "A duly issued patent is in all respects presumed to be valid, and *such presumption is strengthened in cases where the prior art relied upon to show invalidity*

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of said boom, said extensible section being mounted non-oscillatably about said axis relative to said base section, and mechanism for oscillating said base section about said axis.

9. Apparatus comprising a base, an annular track having a horizontal pivotal mounting on said base, a telescoping boom having a base section and an extensible section slidable longitudinally of said base section, said base section having an annular bearing in said track so arranged that said base section of said boom is held against longitudinal movement relative to said annular track, power means operatively connected between said base section of said boom for tilting said boom about said horizontal pivotal mounting, power means operatively connected between said base section and said annular track for oscillating said boom in said bearing about an axis longitudinal of said boom, mechanism operatively connected between said base section and said extensible section for extending and retracting said extensible section of said boom, and an implement attached to the free end of said extensible section in fixed orientation about the longitudinal axis of said extensible section.

16. An apparatus of the character described having in combination a support, a platform pivotally mounted on said support, hydraulic means for rotating said platform acting between said platform and said support and operative through an angle of

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was before the Patent Office." (Emphasis added). See also Admiral Corp. v. Zenith Radio Corp., 296 F. 2d 708 (10th Cir. 1961) where the Court noted at p. 715, "* * * the failure to cite Andrews and Alexandersson as prior-art references *removes from the presumption of validity the strengthening support* which comes from consideration of such prior art by the Patent Office." (Emphasis added). When the prior art relied on has not been cited, the strength of the presumption is less than when the art has been cited, but the presumption does not completely disappear.

There is no dispute whether the remaining patents relied on by defendant as prior art were cited in the patent in suit. None of them was. It is clear, however, that they are not as pertinent as either Stauft or Wheeler, and they would appear to fall within the following illuminating observation made in Otto v. Koppers Co., Inc., supra, 246 F. 2d at p. 801:

> "Astute and enterprising attorneys can always find references not of record in the Patent Office, but if they do not involve some substantial element in the defense of anticipation which was not considered by the Patent Office, the failure to make them record references cannot weaken the statutory presumption."

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not less than 180 degrees of circular movement around its pivot, a telescoping boom comprising a base section and an extensible section, means mounting said base section on said platform for boom oscillation about an axis longitudinal of the boom, a horizontal pivot for said base section mounted on said platform, hydraulic means for tilting said base section about said horizontal pivot, hydraulic means for rotating said boom base section axially, hydraulic means for extending said extensible boom section, a material moving implement pivotally mounted on said extensible section, and means for moving said implement about its pivotal mounting."

If a Court had to give extensive consideration to every prior patent that had any element similar to the one in litigation, the years that are now consumed in such litigation would give way to decades, and the Courts would have time for little, if anything, else.

Plaintiffs contend, relying on the rule above cited, that Wheeler is of no significance because the Patent Office fully considered Stauft, which, plaintiff argues, not only encompasses all pertinent prior art, but also all the substantial elements of Wheeler. Defendant's expert, on the other hand, testified that Wheeler was the most pertinent of all. Though we are attracted to plaintiff's position, we find Wheeler pertinent enough to warrant independent consideration, and, in fact, we have chosen to give independent consideration to each of the patents relied on by defendants, though our discussion of all except Wheeler and Stauft will be somewhat abbreviated.

One issue common to most of the prior art cited by defendant can be best discussed before individual consideration of the patents. One of the elements most relied on by plaintiffs for the validity of their invention is the attachment of an implement capable of bearing heavy loads to the end of a rotatable telescoping boom. Most of the prior art relied on by defendant to show lack of novelty and invention of this particular feature deals with the attachment of various kinds of implements to the end of a piston rod, the cylinder assembly of which is rotatable. The issues relating to this feature are, therefore, whether the attachment of a load-bearing implement to a rotatable telescopic boom "* * * involves the presence of some element, or the new position of an old element in a combination, different from anything found in any prior structure," and whether the differences between it "* * * and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was

made to a person having ordinary skill in the art to which said subject matter pertains." Mott Corporation v. Sunflower Industries, Inc., supra, 314 F. 2d at 879.

Essential to the resolution of this issue is a definition of boom. After consideration of all the evidence in the record, we are disposed to adopt the definition proffered by plaintiffs' expert Nichols, whose testimony we have found inherently credible and persuasive. Moreover, we do not think his definition differs materially from those relied on by defendants.[7] The definition is as follows:

> "A boom is a load bearing structure. In my book, I define it as a heavy beam pivoted at one end and bearing loads at the other. I would like to redefine it to pivoted at or near one end, but in any case it

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[7] Defendants cite the following as additional definitions of booms:

"a) A structural member pivoted at one end which may carry a load at its other end and which may have in addition cables connected near to the load carrying end to help support that end. (Plaintiffs' expert Nicholas, Tr. 425 and as illustrated DxFF)"

"b) The boom as defined in *a* still operates as a boom when it is in a horizontal position and when the load carrying end is supported by cables C-1 which may extend between the load carrying end and a separate member. (Nichols, and as illustrated in DxGG)."

"c) A structural member which supports an implement at some distance away from an end that is pivoted or hinged to a support. (Nichols, Tr. 436)

"d) 'A structural member which supports an implement at some distance out from the supporting machine' (Defendant's expert Baron, Tr. 307) where a structural member is 'something that is designed to resist loads [or] to transmit loads.' (Tr. 308)"

An examination of the record references made in these definitions shows that definition *a* is the word of defendant's attorney, to which plaintiffs' expert Nichols assented; that definitions *b* and *c* represent composites of defendant's attorney's questions; and that definition *d* is a composite of the testimony of defendant's expert Baron.

is inherently a heavy structure capable of bearing loads * * *'' (Nichols, Tr. 375)

Considering this definition in the context of the function and purpose of the patent in suit, it is apparent that the loads intended to be borne at the end of the boom are heavy loads.[8] Thus, to reword the definition of the expert Nichols in the form we adopt, we may say that a boom is a heavy beam capable of bearing heavy loads which is pivoted at or near one end and bears heavy loads at the other. Defendants have attempted to make much of the fact that not all of the claimed purposes of the invention require heavy loads to be borne by the boom. Be that as it may, we may not ignore the fact that one of the principal functions asserted for the invention necessitates a heavy load burden. The fact that a machine built for heavy work can also do lighter work does not detract from those inventive principles which enable it to do the heavy work. The lesser may not negative the greater. Our scrutiny of the prior art will therefore be primarily directed to the question whether those principles which enable the patented machine to do heavy work constitute novelty and invention when contrasted with the prior art cited by defendant.

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[8] The first paragraph of the patent description, deleting the last sentence thereof, reads as follows:

"This invention, as indicated, relates to a material moving apparatus. More particularly, it relates to a means of more expeditiously carrying out various operations wherein material is elevated and moved to a pre-determined position or carried to a distant place of disposal. It is of particular utility for earth-working operations or for handling bulk material, such as sand, gravel, coal, snow, ashes, chemicals, minerals and other similar materials. The apparatus is in the nature of a universal earth-working machine adapted in a single unit to perform functions usually carried out by specialized types of apparatus such as graders, bull-dozers, slopers, motor patrols, ditchers and the like."

It is apparent from the whole of the evidence that the direct connection of the implement to the end of the extensible boom is not only of considerable significance, by virtue of the fact that the connection enables the strains exerted on the implement to be transmitted to the boom, but also constitutes novelty and invention, as those terms are used in patent law. The Court is satisfied from the testimony that the connection of a load bearing implement to the end of a piston rod, as demonstrated in most of the prior art, will not accomplish the purposes of the Ferwerda invention.

When an implement bears a load, it puts a strain on the mechanical element which supports it. In the case of a piston rod, the strain is exerted on the lower entrance into the cylinder, which has to be sealed against the loss of fluid. The strain exerted would not only tend to bend the piston rod, thus causing friction on its retraction into the cylinder, but would also tend to produce leakage of fluid from the cylinder by virtue of the strain exerted on its lower entrance and the wear produced by the movement of the piston rod when it is under that strain. Moreover, if the cylinder itself is placed under stress, it would tend to flatten, thus becoming smaller from top to bottom than from side to side, and resulting in additional difficulty in moving the piston through the cylinder. As the piston rod moves in and out with the load on the implement attached to its end, the points of pressure continually change the leverage causing chafing as the rod is withdrawn into or extended from the cylinder. The motion of the piston rod, under strain, creates a rubbing action on the parts which would tend not only to inhibit the movement of the piston rod within the cylinder, but to destroy the parts on which the rubbing of the piston rod occurs.

In short, it would appear that the connection of an implement to the end of a piston rod would not enable that

implement to withstand heavy loads. Indeed, as plaintiffs' expert testified, and defendant's expert conceded, there is no earth moving machine in existence with an earth moving tool supported at the end of a piston rod. The devices relied on by defendant do not teach the principle employed by the Ferwerdas for the mounting of the implement. In fact, the means employed in those devices appear to be impractical. The Wheeler machine, for example, was designed for shovelling, digging and boring. The means employed to accomplish those ends were, however, impractical, and it was suggested at trial that the only actual use it might bear would be digging in a sandpile for a short time. The success of the Ferwerda device in accomplishing the goals unsuccessfully sought by Wheeler[9] and others strongly suggests novelty. As stated in Williams Iron Works Co. v. Hughes Tool Co., 109 F. 2d 500 at p. 510 (10th Cir. 1940):

> "That others skilled in an art and working in a given field many times endeavored but failed to discover the principle and mode of operation of a new and useful improvement is strongly indicative that he, who thereafter discovered the principle of such improvement and designed a complete and operative device embodying such principle, did more than what would be obvious to a mechanic skilled in the art and that his conception resulted from the exercise of inventive genius."

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[9] Defendant argues in its brief that "There is absolutely no evidence as to what problem Wheeler was facing, or whether or not this supposed problem was solved or was not solved." It appears to the Court that Wheeler was at least concerned with developing a machine that could accomplish the tasks of "shovelling, digging and boring." Inasmuch as the testimony that Wheeler was incapable of performing these tasks was uncontradicted, it does not seem unreasonable to conclude that Wheeler did not accomplish the goals it sought to achieve.

Nor do we think that the Ferwerda innovation was one that "* * * would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. * * * Of course, obviousness, within the meaning of the statute, does not mean that one skilled in the art can perceive the solution after it has been found and pointed out by someone else, but the test is as of an earlier time, when the search is on for the solution to the problem." Mott Corp. v. Sunflower Industries, Inc., supra, 314 F. 2d at 879. One might say in retrospect that the mounting of a load bearing implement on an extensible boom is only a simple advancement over a mounting on a piston rod. "But simplicity is no bar to invention where, as here, the steps taken were not obvious to the ordinary mechanic skilled in the art." Mott Corp. v. Sunflower Industries, Inc., supra, 314 F. 2d at 880. In our opinion, the Ferwerda invention "* * * has substantially advanced the art." Oliver United Filters v. Silver, 206 F. 2d 658, 663 (10th Cir. 1953). The Ferwerdas took the final step that turned failure into success, and "in the law of patents it is the last step that wins." The Barbed Wire Patent, 143 U. S. 275, 283, 12 S. Ct. 443, 36 L. Ed. 154, cited in Oliver United Filters v. Silver, supra, 206 F. 2d at 667. This Court holds that the mounting of a load bearing implement on the end of an extensible boom constitutes both novelty and invention even in the face of the prior art relied on by defendant.

One additional argument of defendant relating to the issue of "booms v. piston rods" should be mentioned here. Defendants have argued that certain language from the case of Superior Separator Co. v. Ottawa Steel Products, 174 F. 2d 483 (10th Cir. 1949) shows that this Circuit has acknowledged that a structure comprised of elongated tubular cylinders and pistons may be called a boom. We may grant, *arguendo*, that this is true. We do not think,

however, that the label is binding here. In our view, it appears that the Court there accepted the label attached by the wording of the patent. Moreover, and more importantly, the issue we have discussed above was not before the Court there, and we do not think the case can be read to resolve it.

THE STAUFT PATENT

As noted above, Stauft was one of the patents expressly cited in the proceedings which led to the issuance of the patent in suit. It was, as a matter of fact, the basis for rejection of certain claims. As also previously noted, the presumption of validity that attaches to the patent by virtue of issuance is strengthened as against the claims of prior art cited in the patent. Stauft thus occupies a different position than the other patents relied on by defendant as prior art. It is proper to note, however, that our conclusions would be the same even if it did not enjoy that status.

The Stauft patent relates to "a new and improved Coke-Drawing Machine" designed to draw coke from the old beehive type of coke oven. The implement intended to accomplish this task, a scraper (to use defendant's terminology) or rake (to use plaintiffs' terminology), is connected to the end of a piston rod which extends and retracts within its cylinder assembly to move the implement in and out of the coke oven. The hydraulic cylinder assembly is so mounted that it may be turned about its longitudinal axis and pivoted about a horizontal axis by hydraulic means. The platform upon which the cylinder is mounted is in turn mounted on a carriage for rotation by hydraulic means.

It appears from defendant's brief that the only serious contention made regarding Stauft is with respect to the question whether a piston rod and cylinder assembly may be considered a boom as that word is used and construed in

the Ferwerda patent. The contention does not withstand scrutiny. Thus, although defendant's expert repeatedly referred to the cylinder assembly and the piston rod as a "boom," our discussion above makes clear that such a label is not proper in terms of the definition we have chosen to employ. The piston rod in Stauft is not a boom to which a load bearing implement may be connected, and the use of the piston rod there does not teach the use of a boom, as we have already held. Indeed, it would seem a reasonable construction of the proceedings before the Patent Office to imply that the Patent Office itself distinguished Stauft on this basis. In any event, our independent determination of the question leads to that result.

In view of defendant's position, it would not seem necessary to further distinguish Stauft. It may, however, be pointed out that Stauft does not have, nor does it teach, the use of mechanism or means acting between the main boom section and the extensible section to extend and retract the extensible section since the fluid which moves the piston rod in Stauft does not constitute a mechanism and is clearly not operatively connected between the base section and the extensible section for extending and retracting the extensible section of the boom.

Other elements of Stauft, such as the use of hydraulic means for sluing the cylinder, rotating the platform on which the cylinder is mounted, etc., will be considered in the section below relating to the issue of novelty of an aggregate of old elements in the patent in suit.

The Wheeler Patent

If battle lines were to be drawn about any specific prior art in this suit, they would have to be drawn about Wheeler. This patent became the focal point, in both testimony and briefs, of considerable discussion. As already noted, the

parties even disagreed as to whether it was cited, or could enjoy the status of cited art, in the patent in suit. We have chosen to consider it as if it had not been cited, except as to claim 2, which defendant apparently concedes to have been considered in light of Wheeler, albeit some two years before the claim was allowed. As against claim two, Wheeler may be considered as prior art cited.

As previously noted, we have resisted the temptation to consider our conclusions regarding Stauft as applicable to Wheeler. We have done this primarily because Stauft enjoys the status of prior art, while Wheeler does not, and, frankly because defendant has argued Wheeler so strenuously. To allude to an old farmyard principle, it is the squeaky wheel that gets the grease. We have given Wheeler independent consideration.

The Wheeler patent relates to a shovelling, digging and boring machine designed "for use in a mine or other place." As was true in Stauft, the implement in Wheeler, a shovel, is hingedly mounted on the end of a piston rod which extends and retracts within its cylinder assembly for movement towards and away from the work to be done. Also, like Stauft, the connection of the implement to the piston rod cannot be said to anticipate the connection of the implement in the Ferwerda patent to a boom. See especially the general discussion relating to booms vs. piston rods at pp. 728-731 and the reference made there to Wheeler at p. 730. Indeed, the reasons for distinguishing Wheeler on this basis would seem even stronger than in Stauft, since the loads that would be expected to be borne by the implement on Wheeler would be greater than those in Stauft because of the kind of work Wheeler was intended to do as contrasted with the work Stauft was designed to accomplish.

Also, like Stauft, the means utilized to retract and extend the piston rod in Wheeler is fluid acting within the cylinder behind the piston rod. Again, for the same rea-

sons as in Stauft, the fluid cannot be considered a mechanism, nor can it be said that it teaches the use of a mechanism acting between the main boom section and the extensible section to extend and retract the extensible section. Likewise, it is not operatively connected between the base section and the extensible section.

Defendant apparently concedes that Wheeler does not have the "associated means" of claim 2 of Ferwerda, the "fixed orientation" of claims 6, 7, and 9 or the "annular track" of claim 9, although defendant qualifies this concession by saying that if these claims are construed as plaintiff contends they should be, then they are within the contemplation of Wheeler. Since we have not construed all these claims in the broad sense defendant contends that plaintiffs have urged, we agree that Wheeler does not have or read on these particular claims. Finally we think the Ferwerda patent has both novelty and invention, as against the components of Wheeler, with respect to the means provided for moving the implement about its pivot as claimed in Claims 2, 8 and 16 and complemented by the specifications, especially column 2, lines 27-30, column 5, lines 49-54, column 6, lines 15-18, column 7, lines 4-6, and column 8, lines 43-46. See also figure 5, which is a diagrammatic view or schematic outline of the hydraulic control system. The claims and the specification may be read together, Harris v. National Machine Works, 171 F. 2d 85, 89 (10th Cir. 1948), and when so read, they clearly go far beyond the means provided in Wheeler, i.e., the spring, for "changing" or "moving" the implement and beyond the means provided in Wheeler, i.e., the arms, for holding the implement in various positions about the pivot.

In light of these distinctions, it is not necessary to go further here to discuss the means utilized in Wheeler for axial rotation, tilting of the cylinder assembly, and turntable rotation. These will be discussed below in the section regarding aggregation of old elements.

Opinion of the District Court.

THE GEORGELIS PATENT

The Georgelis patent relates to a "portable tree pruning or trimming machine." A rotary saw is journalled on a telescopic mast which may be extended or retracted to position the saw at the desired height. The mast may be oscillated by means of a manually operated hand crank not accessible to the operator from his operating position. The device is purely hand-operated.

Defendant does not appear to place much emphasis on this patent, and the Court is inclined to observe that it is far less persuasive than either Stauft or Wheeler. Its telescopic mast, which is not a load bearing structure and does not have a pivot hinge, is clearly not a boom, nor does it teach the use of a boom. The implement is not an earth moving implement, and the means for oscillation by the hand crank do not teach a means for oscillating a boom. Indeed, defendant's only serious contentions seem to be that Georgelis has the "fixed orientation" and "annular track" of the Ferwerda patent. However, defendant's own expert testified to the contrary as to both of these points, and the record is entirely devoid of evidence to support the contention.

THE LIEBMANN PATENT

The Liebmann patent relates to "fluid pressure operated shoveling machines." It is unnecessary to burden this opinion with a description of this impractical device. Having an implement connected to a piston rod, it is distinguishable on the basis described several times above. Essentially, only one hydraulic cylinder is employed to accomplish the motions of raising, lowering, and sluing the bucket, and for rotating what defendant alleges to be the boom. Moreover, the rotation and sluing are merely

dumping operations and do not correspond to or teach the elements of the Ferwerda patent. The fluid causing movement of the piston rod is not a mechanism. Indeed, it would appear from the two paragraphs devoted to Liebmann in the section of defendant's brief which relates to invalidity because of anticipation that the only real contention advanced as to the materiality of Liebmann is with respect to "fixed orientation." Again, defendant's expert testified that Liebmann did not have this element, and the contention is utterly without evidentiary support from the record.

THE NIXON PATENT

The Nixon Patent is a British patent which relates to a loading machine for coal, coke, ore or other material. Like Stauft and Wheeler, the implement in Nixon is mounted on the end of a piston rod, which turns the implement for dumping when extended at the outer end of its stroke. No independent mechanism is provided for this rotation of the piston rod, and there is no mechanism for extending the piston rod, that movement being accomplished by fluid in the cylinder. The patented structure has what could perhaps be called a boom, but the implement is not connected to the end of it, and it could not be said to teach the use of a boom for that purpose. The implement does not have a fixed orientation with respect to one of the boom sections, and there is no means for mounting the cylinder (which defendant's expert called a base section) for oscillation.

Defendant's contentions regarding Nixon are extremely general in nature. It argues that "* * * both Nixon and Moore have the same combination of elements called for in claim 6 and * * *. Nixon shows all of the movements called for in each of the claims in suit and both Nixon and Moore disclose many of the individual elements called

for in these claims." Though it is difficult to assess such general assertions, the contentions appear groundless as illustrated above.

THE MOORE PATENT

As shown above in the quotation from defendant's brief which relates to both Nixon and Moore, defendant's contentions relating to Moore are quite general, if not ephemeral, in nature. Moore relates to a mechanically operated power shovel, no hydraulic means being contemplated for any function of the machine. The implement is attached to a shaft which has no independent extensibility. We do not find it analogous to the Ferwerda Patent.

THE BYRNE PATENT

Reference is made in one sentence of defendant's brief to the Byrne Patent. Defendant's expert testified at trial, however, that it was not more pertinent than the art cited by the examiner during the prosecution of the patent in suit. Since defendant appears only to have alluded to it in passing, it will not be considered here.

C. AGGREGATION OR COMBINATION OF OLD ELEMENTS

Because we have held that not all of the elements of the Ferwerda patent constitute old elements, defendant's arguments relating to unpatentability because of aggregation are really inapposite. We have, however, chosen to discuss them.

At the outset, it should be noted that the Courts have observed a distinction between an aggregation of old elements and a combination of old elements. As distinguished in Great Atlantic & Pacific Tea Co. v. Supermarket Equip-

ment Corp., 340 U. S. 147, 151, 71 S. Ct. 127, 95 L. Ed. 162 (1950), the latter term is used to signify patentability of a mechanical device that brings old factors into cooperation, while the former connotes unpatentability of a device that brings old factors into cooperation for lack of invention. The starting point for such a determination is, of course, a finding that the patent in suit is composed of old elements. If such a finding is made, the combination patent should be scrutinized "* * * with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements." Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., supra, at 152, 71 S. Ct. at 130.

The basic fact that makes this issue irrelevant to the instant case is that there is no finding here that the patent in suit is comprised of old factors into combination. We have, in fact, specifically held that the mounting of a load bearing implement to a rotatable telescopic boom constitutes both novelty, as against the prior art cited in the patent in suit and the uncited art relied on by defendant, and invention. In view of this finding, that at least one material and significant element of the patent in suit constitutes invention within the meaning of the statute, the issue must be resolved against defendant. However, even if we assume arguendo, that this feature does not constitute invention, we still think the issue must be resolved against defendant.

Excerpts from some of the leading cases in this Circuit on the question are set out below:

> "A mere aggregation of old elements is not patentable when the respective individual functions of the assembled elements are not changed and produce no result other than the added results of such functions. A combination of old elements is patentable if it accomplishes either a new result or an old result 'in a

more facile, economical, and efficient way in a particular environment which presented peculiar and difficult problems.'" Admiral Corp. v. Zenith Radio Corp., 296 F. 2d 708, 713 (10th Cir. 1961).

"When the respective individual functions of the elements assembled are not changed and where they produce no result other than the added results of such functions, there is a mere aggregation of elements.

"When the elements are so united that by their reciprocal influence upon each other or by their joint action on a common objective, they perform additional functions and accomplish additional results, the union is a true combination.

"The result must be due to the joint and cooperative action of all the elements, not a mere aggregation of the several results of the separate elements acting independently; it must be the product of the combination and not a mere aggregate of several results, each a complete product of one of the combined elements." Hutchinson Mfg. Co. v. Mayrach, 192 F. 2d 110, 112 (10th Cir. 1951).

In our view, the Ferwerda machine accomplishes more than the results of the functions of its old elements considered individually. In other words, to use the terminology of Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp. supra, 340 U. S. at 152, 71 S. Ct. at 130, the "* * * whole * * * exceeds the sum of its parts * * *." The patented machine is capable of performing grading, sloping and excavating functions that can be performed by no other type of machine, and it performs some of the functions of other machines "in a more facile, economical, and efficient way." The evidence of the witness Nichols was particularly persuasive in this regard.

As his testimony shows, the machine is not only able to perform its tasks under conditions which make it impossible for other machines to function, for example, in heavy mud adjacent to slopes that must be cut in grading operations, but it is able to perform tasks involving cutting of difficult angles on slopes, gutters, shoulders, etc., that formerly could be accomplished only by hand labor. In addition, it is apparent that the machine can accomplish in a much more efficient way, and with great precision, tasks which other machines could perform only with an operator of consummate skill in such a way that hand labor would be required to finish in order to achieve a satisfactory surface.

Also persuasive in this regard is the commercial success of the machine even in light of the fact that it is neither a fast working machine nor capable of bearing unusually heavy loads. Defendant concedes that the Gradall machine has enjoyed commercial success, but argues that it is due in large part to extensive advertising, which, of course, has nothing to do with patentability, and that, in all probability, the commercial success of the machine is due to certain features of the Gradall which are not contained in the Ferwerda patent claims. As to the first, there is no evidence that the expenditures of the Warner & Swasey Co. for advertising were in excess of those incurred by any other company in the business of manufacturing and selling earth moving machines; nor do the expenditures appear to be of such magnitude to make it appear that the construction industry was taken in by Madison Avenue rather than by the intrinsic appeal of the machine. As to the latter, it is sufficient to say that this issue goes to the question of damages, not to patentability. Indeed, as defendants have consistently argued, it is the claims of the patent that determine its validity, not the machine that is presumably built on the basis of the patent.

In short, it is our view that the Ferwerda patent, if all of its elements be considered old, constitutes a true combination of elements which is in itself patentable.

D. SPECIFICITY OF CLAIMS

We now come to the question of whether the claims are specific enough as to enable one skilled in the art to construct the machine. 35 U. S. C. § 112 requires that specification of the patent must describe the invention in "full, clear, concise, and exact terms as to enable any person skilled in the art" to construct the invention. The section further states that "[t]he specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention."

Defendant contends that neither the specification nor the claims are specific enough to meet these statutory requirements with regard to certain enumerated elements. Defendant's witness Baron repeatedly testified of difficulty in interpreting certain claim terminologies. In particular, the specification refers to a given item as a "sleeve" in one place and a "piston" in another; the "boom section" is referred to as "rearward boom section," "outer boom section", "non-sliding telescopic section," and "frame section." Defendant finds further difficulty with the term "vertically adjustable frame pivotally mounted on said standards" called for in claim two, and with the term "an annular track having a horizontal mounting on said base" called for in claim nine.

Essentially, defendant's objections of ambiguity take two forms. The first refers to allegedly ambiguous language in the claims and specifications themselves. Clearly, the specifications may not be used to expand the claims, but equally clear is the fact that the claims may be considered in conjunction with the specifications and drawings for purposes of better understanding the claims. Wyott

Mfg. Co. v. Doran Coffee Roasting Co., 160 F. Supp. 644 (D. C. Colo. 1958), modified, Doran Coffee Roasting Co. v. Wyott Mfg. Co., 267 F. 2d 200 (10th Cir. 1959); Morrill v. Automatic Industries, 93 F. Supp. 697 (D. C. W. D. Mo. 1950).

The second line of objection is specifically directed against the claim term "vertically adjustable frame pivotally mounted." Defendant contends that this claim language is totally free from ambiguity and requires a frame which is: 1. vertically adjustable and 2. pivotally mounted. The argument proceeds that as plaintiff's invention has no such literally described item, the claim is fatally defective because it does not claim the invention described.

Defendant cites Keystone Bridge Co. v. Phoenix Iron Co., 95 U. S. 274, 24 L. Ed. 344 (1877) for the proposition that when terms of a claim in a patent are clear and unambiguous, the patentee is bound by them and he can claim nothing beyond them. This Court does not quarrel with that statement of the law as applied to the undisputedly unambiguous terms involved in the cited case.

Clearly though the term "vertically adjustable frame pivotally mounted" is not totally free from ambiguity and subject to only one logical interpretation. The defendant has attempted to restrict the term to its literal meaning, contending that because the plaintiff's whole frame does not adjust vertically, it is not the item called for in the claim. Plaintiff's expert witness gives the term a second plausible meaning by explaining that it is "vertically adjustable" in that it adjusts about the pivot axis to effect vertical adjustment of all parts of the frame and boom except those on the axis. Plaintiff's equally logical interpretation shows ambiguity in the terminology, and gives the term significance in relation to plaintiff's machine, the accompanying specifications and pertinent drawings. Plaintiff's interpretation involves no expansion of claims, but merely clarification of them. A literal meaning

is not necessarily the only correct meaning. Therefore, the Court believes this claim term to be one over which reasonable men could easily differ, and the specifications and drawings should be permitted to aid in its proper interpretation.

Alternatively, this Court believes that if it were to hold *that defendant's literal interpretation of the term was the* only correct one, hence the term was unambiguous, the specifications and drawings should still be read with the claims for the purpose of better understanding the meaning of the claims in their entirety. Morrill v. Automatic Industries, 93 F. Supp. 697, 706 (D. C. W. D. Mo. 1950) states the better rule that claims may be read in connection with both specifications and drawings, whether the claims themselves are free from ambiguity or not.

Without question, more accurate language could have been used in the claims and specifications, but when they are read along with the supporting drawings, the ambiguities do not seem fatal. Read together, it would seem that one skilled in the art would have been able to construct the device described in the claims and specifications. The patent will not fail merely because more accurate language could probably have been used.

VALIDITY: CONCLUSIONS

In light of the preceding discussion, the Court reaches the following conclusions regarding the validity of the claims in suit:

The defendant has failed to overcome the presumption of the patent's validity. This presumption is clearly stated in the cases and in the statute. 35 U. S. C. § 282; Admiral Corp. v. Zenith Radio Corp., 296 F. 2d 708 (10th Cir. 1961); Bewal, Inc. v. Minnesota Mining and Mfg. Co., 292 F. 2d 159 (10th Cir. 1961).

Defendant has sought to overcome the presumption of validity by attempting to show: that the patent was in

"public use" for more than one year prior to the application; that the machine represented merely an aggregation of old elements disclosed in prior art; that the claims did not contain sufficient novelty and invention as to be patentable; and that the invention was not described with sufficient particularity as to enable one skilled in the art to construct the machine.

Essentially, the Court has found against the defendant on each of these primary contentions.

Although the invention saw some limited use for more than one year prior to the application, it was not in "public use" within the intended meaning of 35 U. S. C. § 102(b).

Upon careful analysis of all prior art cited by the defendant, the Court concludes that the mounting of a load bearing implement on a rotatable telescopic boom in plaintiff's device constitutes both novelty and invention. Connection of a load bearing implement to a piston rod has been the essential feature of most prior art cited by the defendant. For the reasons expressed in the above detailed analysis, a piston rod clearly does not accomplish the purposes of plaintiff's invention. The evidence also establishes a particular utility for plaintiff's machine with respect to certain earth-moving and bulk material handling operations.

Despite the existence of certain ambiguities, the claims, when aided by the specifications and diagrams, are sufficiently specific and definite as to enable a person skilled in the art to construct the machine as required by 35 U. S. C. § 112.

Plaintiff's patent claims 2, 6, 7, 8, 9 and 16 are valid.

II. Infringement

Having ascertained the validity of all claims presented, we now proceed to the ultimate question of infringement.

Prior to a claim by claim analysis, we turn our attention to defendant's infringement defense of estoppel, which defendant asserts in regard to four of the six claims in suit.

FILE WRAPPER ESTOPPEL

Defendant contends that claims 6, 7, 8, and 9 cannot be construed to include the Grademaster because of certain proceedings held in the Patent Office. A long history of correspondence between the Ferwerda attorneys and the Patent Office reveals that claims 6-9 were formerly presented as application claims 59-62. These claims, along with application claims 63-65, were stated by plaintiff's attorneys as being "revisions of claims formerly submitted of the nature of claims 35 and 40." Claims 35 and 40 had been previously rejected as "unpatentable over Stauft." Defendant refers to the file wrapper, which contains certain statements made by the Ferwerda attorneys. In correspondence accompanying the submission of claims 59-65 the attorneys stated that "the claims distinguish over this reference (Stauft) by reciting the telescoping boom sections, the boom construction of parallel beam members and the mounting of the boom in an annular bearing cradled on the rotatable platform of the vehicular base."

Defendant asserts that only because this statement was made by plaintiff's attorneys did the Patent Office allow claims 6-9. The argument proceeds that if only through the addition of these features can claims 6-9 be held as valid over Stauft, each one of these three features must either appear or be read into claims 6-9 by the Court. The focus of defendant's argument is on the term "parallel beam members." Of the three mentioned features, this is the only one that does not appear in claims 6-9. Defendant concludes that it must be read into these claims, and

that once it is there can be no infringement of claims 6-9 by defendant's Grademaster because there is no evidence that the Grademaster has such a structure.

Defendant has not chosen to present this line of argument in light of the conventional concept of file wrapper estoppel. Plaintiff, however, has chosen to characterize the contention as "file wrapper estoppel," and has proceeded to refute defendant's argument on that basis.

The doctrine of "file wrapper estoppel" applies when an applicant, as a result of a rejection of his application, inserts certain limitations and restrictions for the purpose of inducing the Patent Office to grant his patent. After subsequent issuance of the patent, the patentee cannot thereafter claim that his patent shall be construed as it would have been if such limitations and restrictions were not contained in it. 2 Walker on Patents 1215 (Deller ed. 1937); Smith v. Magic City Kennel Club, Inc., 282 U. S. 784, 51 S. Ct. 291, 75 L. Ed. 707 (1931).

For at least two reasons, the doctrine of "file wrapper estoppel" does not apply in this case. First, there was no rejection of plaintiff's applications for claims 6-9. Secondly, the defense of "file wrapper estoppel" here would be based on the patentees having added the limitation of "parallel beam members" to the claims in suit to secure their allowance. However, the claims in suit make no mention of parallel beam members.

Because defendant's argument does not fall squarely within the doctrine, further explanation must be given to satisfactorily dispose of defendant's contentions. Defendant wishes to read the words "parallel beam members," mentioned by plaintiff's attorney and appearing in the "Remarks" section of the file wrapper, into plaintiff's claims 6-9. In support of this proposition that claims 6-9 are to be read including "parallel beam members," defendant cites Haynes Stellite Co. v. Osage Metal Co., 110 F. 2d

11 (10th Cir. 1939). In that case an element necessary to the proper functioning of the apparatus was read into the claims by the Court. Such situation seems properly distinguishable from the case at hand, in that the element read into the claim was absolutely necessary for operation of the apparatus.

Defendant's whole estoppel argument is based on the statement made by plaintiff's attorney accompanying the submission of application claims 59-65. To properly assess the merit of defendant's argument, the Court has carefully scrutinized this statement and the accompanying correspondence. The attorney stated that the "* * * claims distinguish * * * by reciting * * * parallel beam members. * * *" But clearly claims 6-9 make absolutely no mention of "parallel beam members." Therefore, logic alone demands the conclusion that the attorney was either referring to other claims than those in question or that he made a clearly erroneous statement.

The correspondence in question refers not only to application claims 59-65 but also to application claims 66-71. The wording of application claims 69 and 70 includes "parallel beam members," therefore when the attorney stated the three distinguishing features of these claims over the Stauft patent, he probably was referring to the aggregate of application claims 59-71.

Too, the statement by plaintiff's attorney might have been clearly erroneous. Eversharp, Inc. v. Fisher Pen Co., 204 F. Supp. 649, 674 (N. D. Ill. 1961) succinctly states the proper law if such is the case.

> "Clearly erroneous statements of counsel, that certain limitations are contained in each of several claims, inadvertently made in remarks accompanying an amendment to a patent application, cannot destroy the clear and express differences recited in such claims." (p. 674).

Claims 6-9 make no mention of "parallel beam members." The claims stand on their own two feet without any mention of these words; there is no reason why the Court should read these words into the claims. Accordingly, claims 6-9 have not been immunized from possible infringement by defendant's estoppel contention.

The parties have limited the infringement issue to certain, specific claim elements. As each of the six claims contains one or more of these elements, there is an infringement question presented by each of the claims. In order to find infringement of a particular claim "every element of the claim, or its functional equivalent, must * * * be found in the accused article." Lockwood v. Langendorf United Bakeries, Inc., 324 F. 2d 82 (9th Cir. 1963).

CLAIM 2

Defendant contends that his machine has neither the "vertically adjustable frame" nor the "associated means" for changing the angle of the implement as defined in claim 2.

a. "Vertically adjustable frame"—In passing on the patent's validity, this Court has already held that plaintiff's invention contains an element which may be construed as a "vertically adjustable frame" as specified in plaintiff's claim 2. The question now before the Court is whether or not the Grademaster contains the same or an equivalent element.

Plaintiff's exhibit 1 (Patent) shows the "vertically adjustable frame" to be comprised of ring 27 (Figure 3) carrying rollers through which the main boom section 51 (Figure 2) rotates. Side rails 37 (Figure 1) and a rear cross-member, which carries the bearing marked 39 (Figure 1), comprise the remainder of the section. This frame

pivots about an horizontal axis to vertically adjust the position of the boom.

Plaintiff's exhibit 5G (Appendix 1) shows a cradle "C" as part of the Grademaster. Plaintiff's expert, Lay testified that this cradle constituted a "vertically adjustable frame" as specified in claim 2. He identified this cradle as corresponding in function to the "vertically adjustable frame" in the Ferwerda machine.

Comparison of plaintiff's "vertically adjustable frame" with cradle "C" of defendant's Grademaster reveals a striking similarity of purpose. Both parts pivot up and down on an horizontal axis. Both parts allow a boom to pass through, which elevates and depresses as the "frame" or "cradle" is moved up and down about its axis. Both parts also permit the boom to be rotated within the "frame" or "cradle." The plaintiff's "vertically adjustable frame" and cradle "C" of the Grademaster are equivalent elements.

b. "Associated means"—Defendant's position here is that the Grademaster does not have the associated means for changing the angle of the tool at the outer end of the boom, as is called for in the Ferwerda patent. Defendant's Grademaster has an hydraulic cylinder mounted on the extensible boom section and connected to the tool head for its operation. This hydraulic cylinder is in no way hydraulically associated with the cylinder which is responsible for the movement of the extensible boom. Therefore, defendant argues that the Grademaster does not have an "associated means" for manipulating the tool head, but an entirely independent means.

Plaintiff maintains that the claim term "associated means" has nothing to do with hydraulic association. His claim interpretation requires only that the means for adjusting the tool be associated with the means for extending the boom. This physical association, as it seems

to be construed, is present because the tool cylinder is mounted on the extensible boom, and when the boom cylinder moves the boom, the tool cylinder on the boom moves also to prevent the tool angle from changing.

Plaintiff's exhibit 1 (Figure 1) shows Gradall boom cylinder 106 and tool cylinder 107. Tool cylinder 107 is mounted on the rear main boom section as contrasted to tool cylinder 107 of the Grademaster, which is mounted on the extensible boom section, shown in plaintiff's exhibit 5-H (Appendix 2). Testimony of plaintiff's witness, Lay, and the patent figures themselves, reveal that these two cylinders in the Gradall are both part of the same hydraulic system. In order to maintain a given tool position, the piston in 107 must move at the same speed with reference to cylinder 107 as the piston in 106 must move with reference to cylinder 106.

A basic determination of what the term "associated means" contemplates must first be made. Essentially, defendant maintains that it means hydraulic association, and plaintiff focuses on physical association. Looking at the patent itself, specifically column 6 of plaintiff's exhibit 1, there appears an explanation as to how the pistons must move in "unison" to maintain a given tool position. There further appears the intricate process whereby the hydraulic fluid re-positions itself in the associated hydraulic systems to effect a different angle of the tool head. Additional patent wordings seem to indicate that the patent itself contemplates hydraulic association, rather than physical association. Also, it seems difficult to read "associated means" as merely physically associated, for then all elements in the patent could be so described, and the terminology would be of little assistance in understanding the patent.

We conclude that "associated means" refers to hydraulically associated. In the Grademaster, the two pis-

tons are completely hydraulically independent. There is no need for elaborate coordination between the pistons in order to move the tool angle. There is no conceivable fear of cavitation problems on boom extension, as testified to by defendant's expert witness. The implementation of two separate hydraulic systems is clearly an advance in the art. The Grademaster does not have "associated means" as understood by this Court, therefore claim 2 is not infringed.

Claims 6 and 7

Claims 6 and 7 may be treated together, because each claim contains the same two contested elements. The parties have agreed in the pre-trial Order that infringement of one of these claims necessarily would infringe the other claim.

a. "A fixed orientation"—This language appears in claims 6, 7 and 9. Claim 7 calls for "an implement • • • said implement having a fixed orientation relative to the longitudinal axis of said extension section." Plaintiff contends that "fixed orientation" means that the implement is fixed so as to rotate with the extensible boom. The fact that the implement is movable relative to the boom about a pivot axis which lies perpendicular to, and extends across the longitudinal axis of the boom, does not preclude the implement from lying in "fixed orientation" relative to the longitudinal axis of the boom. Defendant's own expert lends some credence to plaintiff's interpretation when he testified that the term "fixed orientation" seems to be a way of showing that the implement has to rotate with the extensible section.

Defendant, however, asserts that the implement at the end of the boom is not in "fixed orientation" to the boom, but rather is pivotally mounted for movement with respect to the boom. It maintains that the Grademaster implement,

along with the implements shown in figures 1, 2, 6 and 8 of plaintiff's exhibit 1 (the Ferwerda patent), do not meet the "fixed orientation" specification because they can be swung about an axis extending crosswise of the longitudinal axis of the boom. By "fixed orientation," the patent commands that the implement can in no way move as a unit. Because the Grademaster implement does move pivotally as a unit, defendant contends that there can be no infringement.

Figure 7 of plaintiff's exhibit 1 provides an example of "fixed orientation," says defendant. Defendant's expert testified with respect to figure 7 that "the two parts of the clam shell do move apart and together, but the implement as a whole is fixed." Plaintiffs note in their brief that the Grademaster tool head movement is the same as the clam shell bucket movement in figure 7. The Court is unable to agree with this conclusion. It is true that both halves of the clam shell move in relation to the boom, but it appears that the mouth of the clam shell will always be at a similar angle, i. e., a clearly "fixed orientation," in relation to the boom section. This is not true for the Grademaster tool head or for those appearing in figures 1, 2, 6 and 8 of exhibit 1. Those tool heads pivot freely about an axis extending crosswise of the longitudinal axis of the boom.

To say that the tool heads in figures 1, 2, 6 and 8 and the one mounted on the Grademaster have similar movements, is not to answer the question of whether they have "fixed orientation," however. The answer to that question must lie in the phraseology of the claims and specifications of the patent. See Texas Co. v. Globe Oil and Refining Co., 112 F. Supp. 455 (N. D. Ill. 1953), affirmed, 225 F. 2d 725 (7th Cir. 1955).

Defendant maintains that claims 2, 8 and 16 call for an implement movably mounted on a boom. This is obvious, for each of these claims also provides a means for moving the implement relative to the boom. Claims 6, 7 and 9, which call for an implement having a "fixed orientation,"

do not define the implement as movably mounted and make no mention of a means for moving the implement with respect to the boom. Therefore, defendant concludes that "fixed orientation" means an immovable implement or at least a fixed digging angle as is characteristic of the clam shell bucket.

Turning now to plaintiff's exhibit 1, column 2, line 27 of the specification reads "* * * a specialized implement is provided * * * subject to harmonious control with the movement of the apparatus." Column 5, line 49 specifies that "the hoe-type bucket may thus be turned to any desired angle * * *." Column 8, line 43 speaks of "* * * controlling the operation angle * * * of the implement mounted on the free end of the boom." These specification excerpts are clearly describing implements other than the clam shell of figure 7. Nowhere do the specifications mention an implement which is rigidly fixed to the boom. And only brief mention is made at the bottom of column 8 of the clam shell bucket. Therefore, the "fixed orientation" descriptions in claims 6, 7 and 9 if given defendant's interpretation, must either all refer to the figure 7 clam shell briefly mentioned in the specifications, or to a rigidly affixed implement nowhere described in the specifications. Neither of these alternatives seems likely to have been the intent of the patentee.

It remains only to consider the defendant's claim differentiation argument. Under this doctrine, express limitation in one claim negatives any intent to similarly limit by implication any claim in which such limitation is not expressed. Texas Co. v. Globe Oil and Refining Co., supra. Therefore, defendant contends that if claims 6, 7 and 9 define a tool in "fixed orientation" as one that will rotate with the boom about its longitudinal axis, then claims 2, 8 and 16, which make no mention of "fixed orientation", must of necessity define a tool which does not necessarily rotate with the boom. But to do this, is to go beyond the

specifications and the invention claimed. Therefore, claims 2, 8 and 16 must conform to the invention and refer to a tool which rotates with the boom about its longitudinal axis, and claims 6, 7 and 9, which speak of "fixed orientation," must refer to a tool which does something less, i.e., is rigidly fixed to the boom.

Plaintiff points to Texas Co. v. Globe Oil and Refining Co., supra, to refute defendant's argument based on the same case. Therein the Appellate Court expressly pointed out that the rule of claim differentiation is inapplicable under circumstances where the limitation in the narrower claim must be read into the broader claim in order to render the claims consistent with the invention. Such is the case at hand, which means that "fixed orientation," meaning an implement which is fixed so as to rotate with the extensible boom, can be implied in claims 2, 8 and 16, and mean in those claims the same thing that it means in claims 6, 7 and 9. The rule of claim differentiation must give way to the controlling rule that a patentee's broadest claim can be no broader than his actual invention. Kemart Corp. v. Printing Arts Research Laboratories, 201 F. 2d 624 (9th Cir. 1953).

"Fixed orientation" means a tool that rotates with the boom. That is the kind of tool appearing on the Grademaster, therefore claims 6, 7 and 9 do not avoid infringement on the basis of this element.

b. "Oscillation"—Defendant contends that the Grademaster does not have a means mounting the boom for "oscillation," or any mechanism for "oscillating" the boom. This contention is based on the fact that the Grademaster boom is rotated by a reversible hydraulic motor, which is capable of continuous rotation in any one direction. Pointing to plaintiff's own witness who defined oscillation as a more restricted movement than rotation, i.e., a "back and forth" movement, defendant maintains

that the Grademaster's rotating boom cannot infringe claims 6, 7, 8, 9 and 16, all of which contain the terms "oscillation" or "oscillating."

On the other hand, it is plaintiff's position that just because the Grademaster boom is capable of continuous rotation, this does not mean that there is not infringement of the lesser included function of oscillation. Plaintiff points to the testimony of defendant's own expert, who stated substantially that the advantages of full rotation are rather small. Plaintiff cites numerous authorities for the proposition that addition of a function does not necessarily avoid infringement. See, Kelley-Koett Mfg. Co. v. McEuen, 130 F. 2d 488 (6th Cir. 1942), cert. den., 318 U. S. 762, 63 S. Ct. 662, 87 L. Ed. 1134 (1942). Therefore, defendant's adding the function of continuous rotation, while maintaining the function of oscillation, does not avoid infringement.

Essentially, we agree with plaintiff's position. The crux of infringement is whether "* * * the inventive idea of the original patentee has been appropriated, and whether the defendant's device contains the material features of the patent in suit * * *." Crown Cork & Seal Co. of Baltimore City v. Aluminum Stopper Co., 108 F. 845, 866 (4th Cir. 1901). The question then is not whether "oscillation" is equal to "rotation." That determination involves little more than a question of semantics. The crucial point is whether defendant has appropriated plaintiff's "inventive idea" or not. It follows that if rotation were significantly more advantageous than oscillation, and added many new and important functions, there probably would not be any infringement.

However, it seems that the advantages added by rotation capabilities are quite small. Defendant's expert said that in scraping the roof of a tunnel, complete rotation might be of "slight advantage." He also testified to an advantage in being able to turn the tool head completely upside down when the boom is cradled on the carrier and in the

road travel position. Thirdly, if a rock were stuck in the bucket, it would be advantageous to be able to turn the bucket upside down to shake the rock out. All of these "advantages" seem minor. The primary utility of both plaintiff's machine and defendant's Grademaster is on the open road in excavating and bulk material moving operations. It seems that it is in this capacity that functions must be compared. For infringement, there must exist "substantial identity of function, means and result." Martin v. Ford Alexander Corp., 160 F. Supp. 670, 676 (D. C. S. D. Calif. 1958). From the evidence presented, it would seem that there exists "substantial identity" of boom moving functions in earth moving and bulk material moving operations.

It remains only to consider the two additional arguments put to the Court by defendant. It cites Mattel, Inc. v. Louis Marx and Co., 200 F. Supp. 593 (D. C. Calif. 1961) as distinguishing between "oscillation" and "rotation." The case is clearly distinguishable on its facts. In Mattel, the original claims made were broad enough to cover both oscillation and rotation, but they were specifically rejected for narrower claims containing only oscillating means. Such a situation created the classic file wrapper estoppel case, and the Court was prevented from equating "oscillating" in the accepted claims with "rotating" in the rejected claims.

Furthermore, in the Mattel toy gun case, "rotation" was presumably a one way rotation. Therefore, the back and forth movement of "oscillation" did not come within the movement of one way rotation. This is not the same problem as presented by the free rotation movement in the present case.

Defendant does advance another form of the "file wrapper estoppel" doctrine at this point. He traces the history of numerous rejections of plaintiff's claims. The boom turning function had been described as "rotation" in these

earlier rejected claims. When claims 6-9 were finally accepted, the function described in them was "oscillation." Defendant evidently infers that because claims containing the term "rotation" were rejected, and those containing the term "oscillation" were accepted, this means that plaintiff is restricted to the claim term "oscillation," which is not the equivalent to "rotation."

This seems little more than conjecture, for neither the file wrapper nor the evidence discloses that the reason new application claims 59-62 (6-9 in suit), combining elements of former application claims 35-40, were earlier rejected and later accepted was because the word "oscillation" was substituted for the term "rotation." Actually, the file wrapper discloses exactly the contrary. In defendant's exhibit A, on page 97 of the file wrapper, it is clearly shown that claims 35-40 had been worded completely different and had been rejected for other reasons enumerated therein.

The Grademaster boom, being capable of free rotation, has substantial identity of function with plaintiff's boom described as one capable of "oscillation." Therefore, infringement of claims 6, 7, 8, 9 and 16 is not avoided by these contentions.

CLAIM 8

The only dispute here was over the claim term "oscillation." For those reasons immediately above set forth, infringement of Claim 8 by the Grademaster is not avoided for want of this element.

CLAIM 9

Defendant asserts that this claim is not infringed because the Grademaster does not have a "fixed orientation" between the implement and the boom; it does not have a means for "oscillating" the boom about its axis; and it does not have an "annular track" and an "annular

bearing" in said track so arranged that the boom is "held against longitudinal movement relative to said annular track." The first two of these contentions have already been dealt with above. The "annular track" and "annular bearing" question will be dealt with at this time.

Plaintiff's expert testified that cradle "C" of the Grademaster (exhibits 5G and 5H) was an "annular track," and that the roller bearing in the track was an "annular bearing" which held the boom against longitudinal movement. Defendant's own expert testified that the Grademaster had two annular bearings and tracks. Furthermore, defendant admitted in response to plaintiff's requests for admissions that the Grademaster had an "annular bearing means which encircle the boom section and which hold the boom section against movement longitudinally of the axis of the boom." This is exactly what is described in claim 9.

But defendant's primary objection here is directed at the claim 9 phraseology "said base section having an annular bearing in said track so arranged that said boom is held against longitudinal movement relative to said annular track." Several objections of non-specificity of claims are aimed at this language. Plaintiff's expert testified that bearing 39, shown in plaintiff's exhibit 1 (Figure 1) of the first machine made by plaintiff, was what he thought prevented longitudinal movement of the boom. Admittedly, this does at first glance seem to be contrary to the claim 9 language. If a claim is susceptible to more than one interpretation, that interpretation which will define the actual invention should be adopted. *McClain* v. Ortmayer, 141 U. S. 419, 428, 12 S. Ct. 76, 35 L. Ed. 800 (1891). Following this principle, defendant maintains that to preserve claim 9 from the defect of uncertainty, the claim must be limited to an annular track assembly having a bearing on the end of the boom, as bearing 39 shown in the patent, to prevent longitudinal movement of the outer boom section. As the Grademaster clearly has no

such bearing at the rear of the boom, there can be no infringement.

Therefore, defendant's argument of non-specificity regarding the "annular bearing" terminology and functions, seeks to read into claim 9, "having a bearing on the rear of the boom," which the Grademaster obviously does not have. As we have previously noted in our discussion concerning the specificity of claims, some of the claims here are not as clear as they otherwise might be, but one skilled in the art can properly translate them. They must be read in conjunction with the specifications and drawings when any ambiguity arises.

When claim 9 is read in its entirety, and with the attendant specifications and drawings, it seems clear that the patentee's intent was not to specify that the annular bearing itself had to hold against the longitudinal movement of the boom. It seems rather that plaintiff's intention was to claim a "cradle" or "frame", which included an annular bearing for boom rotation, and which also provided a means for holding against longitudinal movement. Witnesses for both sides seemed to understand throughout the trial that the cradle held against longitudinal movement by the boom. It is only with regard to claim 9 that defendant contends that the holding bearing must be mounted on the end of the boom to meet the claim.

Claim 9 does not avoid infringement on any of the grounds asserted by defendant.

Claim 16

Defendant's contention here was that the Grademaster boom did not have a means for "oscillating" it about its axis as was defined in the claim. In accordance with our findings under claims 6 and 7, infringement of claim 16 is not avoided for want of a means for "oscillation" in the Grademaster.

It is well established that the test of infringement is whether the accused device does the same work in substantially the same way and accomplishes the same result. Sanitary Refrigerator v. Winters et al., 280 U. S. 30, 42, 50 S. Ct. 9, 79 L. Ed. 147 (1929); Sears Roebuck v. Jones, 308 F. 2d 705, 708 (10th Cir. 1962). The evidence establishes well that the Grademaster does exactly this. The claimed differences in certain elements arise from certain non-fatal differences in descriptive terminologies, many of which are essentially no more than semantic difficulties. The inventive idea has been appropriated, and this is clearly the most significant and determinative factor in this case.

Therefore, this Court specifically holds that:

1. Claims 2, 6, 7, 8, 9 and 16 of the Ferwerda patent are valid.

2. Claim 2 is not infringed.

3. Claims 6, 7, 8, 9 and 16 of the Ferwerda patent are infringed by the defendant's Grademaster.

4. Plaintiff is entitled to judgment to enjoin the continued infringement of these claims.

At an appropriate time, evidence will be taken on the question of damages suffered by plaintiff. Judgment will be entered accordingly.

The foregoing shall constitute my Findings of Fact and Conclusions of Law in conformance with Rule 52 of the Federal Rules of Civil Procedure.

Counsel for plaintiff will prepare a Judgment and Decree in accordance with this Opinion.

ALFRED A. ARRAJ,
Chief Judge.

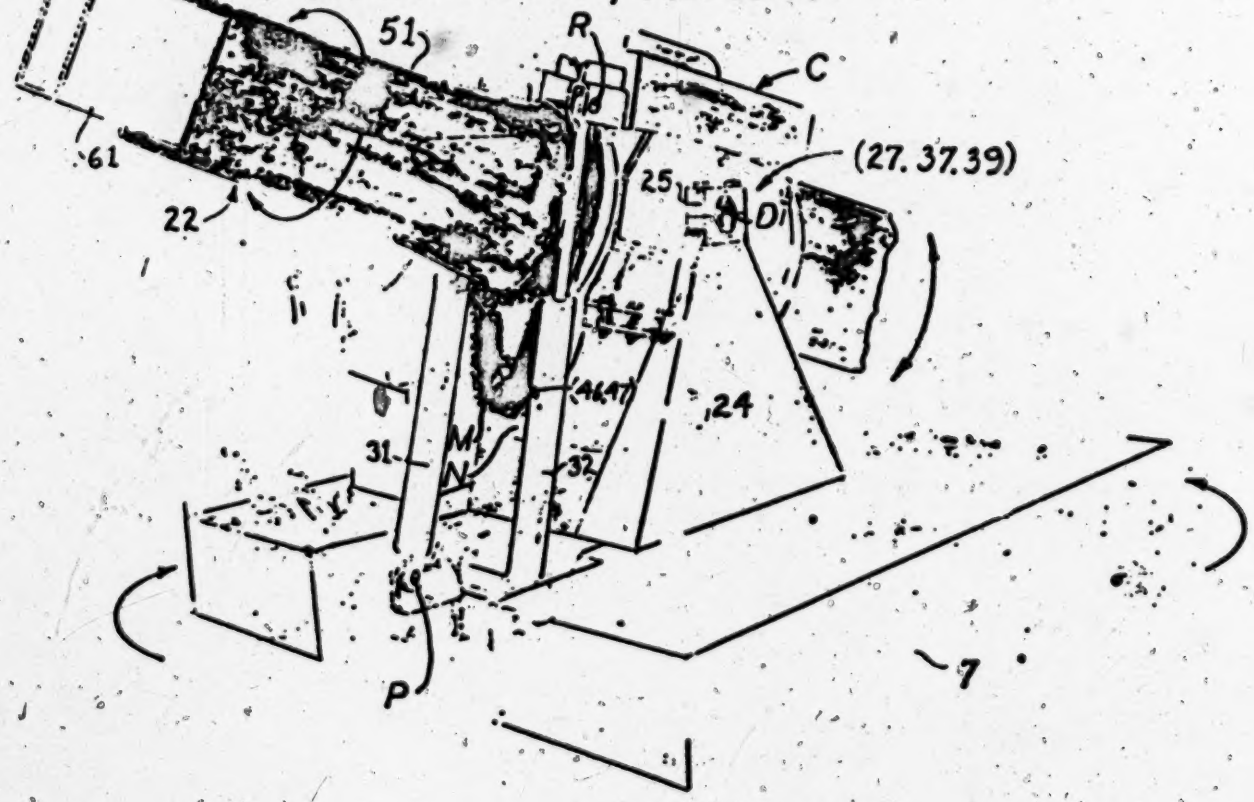
Dated: September 18, 1964.

APPENDIX 1

Annexed to the Court Opinion

(See opposite page)

DRAWING ILLUSTRATING PLATFORM AND BOOM MOUNTING IN DEFENDANT'S GRADEMASTER, MODEL 40



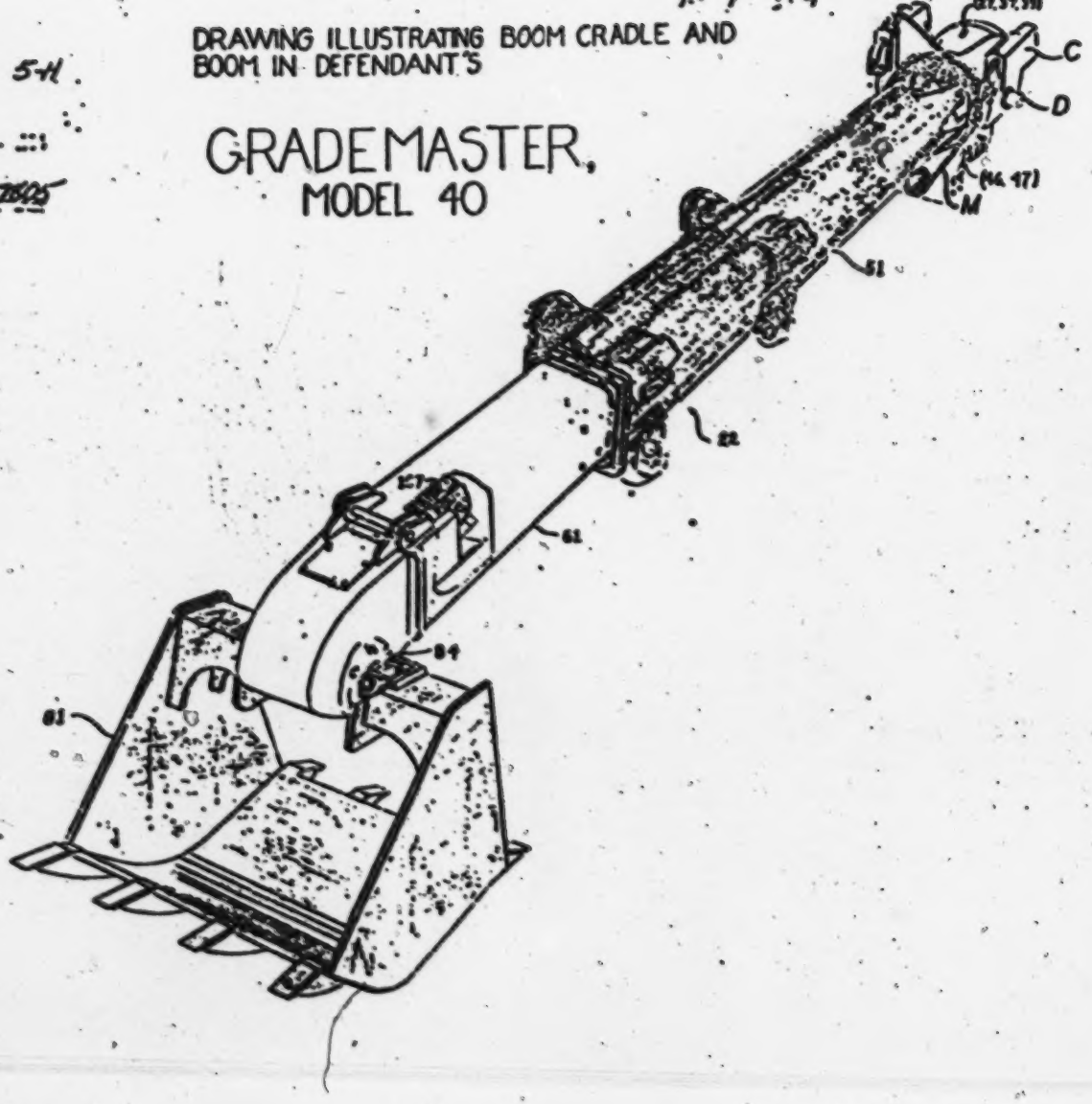
APPENDIX 2

Annexed to the Court Opinion

(See opposite page)

DRAWING ILLUSTRATING BOOM CRADLE AND BOOM IN DEFENDANT'S

GRADEMASTER,
MODEL 40



APPENDIX 2

APPENDIX E

Testimony of Ray Ferwerda, on Direct Examination, Regarding Use of Machine at Ravenna (R. 159-160)

"Q. Mr. Ferwerda, you have in your hands the three latest photographs which I handed to you. Do all of those have a triangular boom on them? A. Yes.

Q. Were they all tried out on a job? A. Yes.

Q. Do you know where they were tried out? A. The triangle boom was first used on the Ravenna arsenal job.

Q. Were all three of those machines used on the Ravenna arsenal job? A. I believe so.

Q. About when was this use? A. When?

Q. When were they used? A. In the spring of 1943.

Q. Under whose control were they? A. My brother and myself.

Q. Can you state about how long they were on that job? A. Approximate six weeks.

Q. Were they operative all of that time; did they give you any trouble? A. Some.

Q. Could you give any estimate as to what time they were down? A. Percentagewise?

Q. Yes. A. Approximately 25 per cent.

Q. Did those three machines, or any of them, operate satisfactorily? A. Partially.

Q. Were you satisfied with them, you and your brother, for final adoption? A. No.

Q. What did you do next with your program on the Gradall? A. After we found this machine not satisfactory, or marketable, we started to think, and we re-engineered a different machine, which we thought was better.

Q. About how long did it take you to re-engineer the machine you are talking about? A. About six months on paper.

Q. Did you have production drawings made? A. Yes, sir.

Q. Did you have production drawings of any of the previous machines you have testified to this afternoon? A. No, sir.

Q. Did you make any further use of the triangular boom machine after the Ravenna arsenal use? A. Yes, I believe we had it in Pennsylvania for a couple of weeks on some other contracts.

Q. About when would that have been? A. About the fall of 1943.

Q. After that did you make further use of the machine? A. No, sir.

Q. State whether or not you used any of the parts of any of these early machines of which you have testified this afternoon in building the machine you completely redesigned? A. No, sir.

Q. State whether or not there is any relationship between this completely redesigned machine and the machine shown in the patent in suit? A. Similarity?

Q. Yes. A. I wouldn't think so, no.

Q. In other words, when you finished with that machine that you hold the photographs of, and you completely redesigned it, what machine did you come up with? A. With the machine that we applied for—patents for.

Q. The patent here in suit? A. Yes."

APPENDIX F

Plaintiff's Exhibit 1—Fig. 1 of Ferwerda U. S. Patent in Suit, No. 2,541,045

(See opposite page)

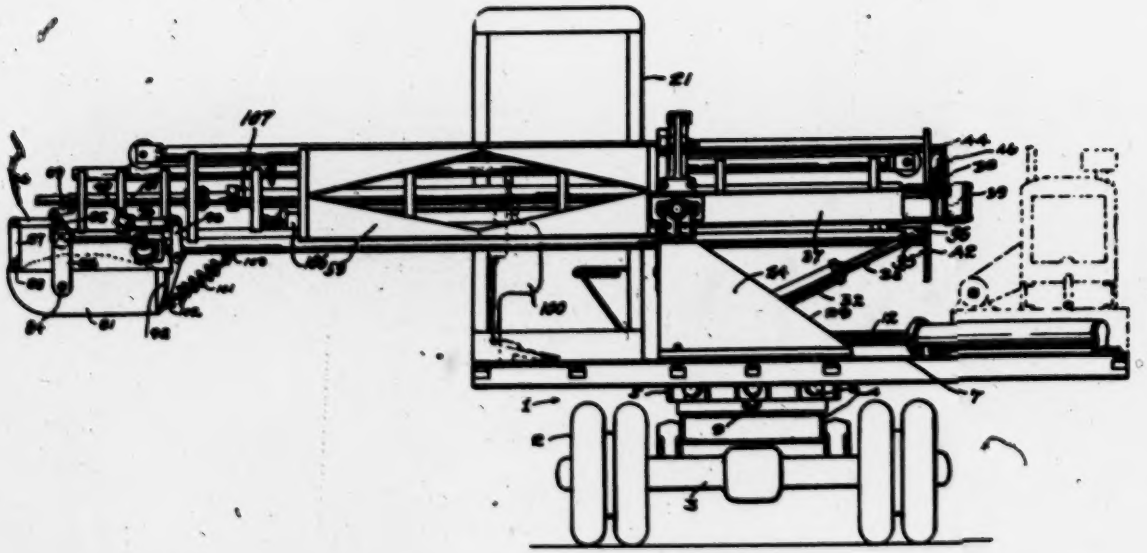


FIG. 1

APPENDIX G

Defendant's Exhibit R—Claim 6 of the Patent in Suit in Sub-paragraph Form

CLAIM 6

Apparatus comprising a base,
a boom mounted on said base for sluing,
mechanism for sluing said boom,
said boom having a base section
and an extensible section telescopically
mounted on said base section,
mechanism to extend and retract said extensible section,
an implement attached to the free end of said extensible
section and having a working edge,
said base section having a transverse pivotal mounting,
mechanism for tilting said base section
about said pivotal mounting,
one of said boom sections having a fixed orientation
relative to said implement working edge,
said one boom section being mounted for oscillation about
an axis extending longitudinally of said boom,
and mechanism for oscillating said one boom section.

APPENDIX H

Defendant's Exhibit W, Sub-Exhibit B Thereof—Photograph of Machine Used at Ravenna

(See opposite page)

APPENDIX I

Defendant's Exhibit W, Sub-Exhibit E Thereof—Mimeographed Statement Distributed by the Ferwerda Brothers Regarding Machine Used at Ravenna

In December of 1942, we started grading operations at the Portage Ordnance Depot, Ravenna, Ohio. The work consisted of extension of railroads, new roads and loading platforms. Frost, snow and rain made it impossible for us to do any trimming on slopes, ditches and berms. The best we could do was to rough them through with clam-buckets and most of the time that was impossible on account of heavy frost. The rough grading operations continued because we dug with power shovels from the bottom of our grade upward, underneath the frost.

With several scraper units, capacity as high as 15 cubic yards, we used a very heavy six ton ripper to break the frost. That did the work successfully but it could not be used to break frost in ditch line because it would tear chunks out of the sides which had to be held to line and grade. The result was that our ditching, sloping and berming lagged behind.

In the middle of March the frost came out of the ground and left us in a very muddy condition which continued on into June on account of having considerable rain.

The Gradall was in action as soon as the frost disappeared and regardless of mud and rain, started operations on the shaping of slopes, ditches and berms. The slopes measured from one to twenty feet high. The ditches were from one to five feet deep with considerable water running in them. The berms were from two to eight feet wide and they were in many instances so muddy that men would sink in them

Statement by Ferwerda Brothers Regarding Machine Used at Ravenna.

to their knees. Approximately two miles of this work was completed during the wet season. Other contractors who visited the project, complimented us on our machine and the quality of work performed.

The project engineers and inspectors spoke very highly of our work with this machine. The above mentioned operation would have taken from thirty to forty men with picks and shovels and they would have been unable to do the work as performed by the Gradall on account of mud clinging to their tools. At that time it was impossible to hire that many men on account of the labor shortage and if our Gradall had not been there, it would have been impossible to complete that project during that period.

FERWERDA BROTHERS